STIC-ILL

From: Kaushal, Sumesh
Sent: Friday, April 26, 2002 12:06 PM
To: STIC-ILL
Subject: ref-req#09605042

TI Identification of a basolateral sorting signal for the M3 muscarinic acetylcholine receptor in Madin-Darby canine kidney cells
SO Journal of Biological Chemistry (2001), 276(13), 10539-10547
CODEN: JBCHA3; ISSN: 0021-9258
AU Nadler, Laurie S.; Kumar, Geetha; Nathanson, Neil M.

TI The basolateral targeting signal in the cytoplasmic domain of glycoprotein G from vesicular stomatitis virus resembles a variety of intracellular targeting motifs related by primary sequence but having diverse targeting activities.
SO JOURNAL OF BIOLOGICAL CHEMISTRY, (1994 Jun 3) 269 (22) 15732-9.
Journal code: HIV; 2985121R. ISSN: 0021-9258.
AU Thomas D C; Roth M G

S. Kaushal
CM1 12A07 AU1636
Ph: 703-305-6838
Mail Box: 11E12

(FILE 'HOME' ENTERED AT 11:17:52 ON 26 APR 2002)

FILE 'MEDLINE, AGRICOLA, CANCERLIT, SCISEARCH, CAPLUS, BIOSIS, MEDICONF' ENTERED AT 11:18:05 ON 26 APR 2002

L1 0 S UROPLAKKIN?
L2 354 S UROPLAKIN?
L3 98 S L2 AND (APICAL OR BASOLATRAL OR GPI OR PIPLC)
L4 34 DUP REM L3 (64 DUPLICATES REMOVED)
L5 34 FOCUS L4 1-
L6 34 SORT L5 PY

=> d an ti so au ab l6 10 18

L6 ANSWER 10 OF 34 SCISEARCH COPYRIGHT 2002 ISI (R)
AN 95:33972 SCISEARCH
TI PERMEABILITY PROPERTIES OF THE MAMMALIAN BLADDER **APICAL** MEMBRANE
SO AMERICAN JOURNAL OF PHYSIOLOGY-CELL PHYSIOLOGY, (NOV 1994) Vol. 36, No. 5, pp. C1483-C1492.
ISSN: 0363-6143.
AU CHANG A; HAMMOND T G; SUN T T; ZEIDEL M L (Reprint)
AB The luminal surface of mammalian bladder is exposed to urine with a composition widely different from that of plasma that bathes the basolateral surface of epithelium. Therefore we predict that the bladder permeability barrier, which is likely located in the **apical** membrane (AM), will exhibit low permeabilities to water, urea, NH3, H+, and small nonelectrolytes. AM surface area increases as the bladder fills with urine and decreases during emptying, a process that involves cyclical endocytosis and reinsertion of membrane from a pool of AM endosomes (AME). Rigid-appearing plaques composed of three proteins, **uroplakins**, have been identified acid occupy 70-90% of AM surface area. To determine permeability properties of the AM permeability barrier, we purified AME and measured their permeabilities. Rabbit urinary bladders were removed, and their **apical** surface was exposed to carboxyfluorescein (CF) or horseradish peroxidase (HRP). Exposure to hypotonic and then isotonic basolateral solutions induced endocytosis of luminal CF or HRP into AME. Electron microscopy of bladders after this treatment revealed HRP entrapped within AME bordered by plaques. AME were purified by differential and sucrose-gradient centrifugation, and CF-containing AME were purified 17.0 +/- 3-fold (SD) with respect to homogenate. Analysis of purified AME by flow cytometry showed that > 95% of vesicles contained CF entrapped from luminal solution and were selectively labeled with anti-**uroplakin** antibody. AME osmotic water permeability averaged 2.3 +/- 0.66 x 10(-4) cm/s and exhibited a high activation energy, indicating that AM contains no water channels. Permeability to urea and NH3 averaged 7.8 +/- 3.7 x 10(-7) and 1.5 +/- 0.3 x 10(-3) cm/s, respectively, which are exceptionally low and similar to permeabilities of other water-tight membranes, including toad urinary bladder and gastric mucosa. AME behaved as a single population in all permeability studies, which will permit future characterization of protein and lipid structure responsible for these unique permeability properties.

L6 ANSWER 18 OF 34 SCISEARCH COPYRIGHT 2002 ISI (R)
AN 1998:227168 SCISEARCH
TI Water and solute permeabilities of medullary thick ascending limb **apical** and basolateral membranes
SO AMERICAN JOURNAL OF PHYSIOLOGY-RENAL PHYSIOLOGY, (MAR 1998) Vol. 43, No. 3, pp. F453-F462.
Publisher: AMER PHYSIOLOGICAL SOC, 9650 ROCKVILLE PIKE, BETHESDA, MD 20814.
ISSN: 0363-6127.
AU Rivers R; Blanchard A; Eladari D; Leviel F; Paillard M; Podevin R A; Zeidel M L (Reprint)
AB The medullary thick ascending limb (MTAL) reabsorbs solute without water and concentrates NH4+ in the interstitium without a favorable pH gradient, activities which require low water and NH3 permeabilities. The contributions of different **apical** and basolateral membrane structures to these low permeabilities are unclear. We isolated highly purified **apical** and basolateral MTAL plasma membranes and measured, by stopped-flow fluorometry, their permeabilities to water, urea, glycerol, protons, and NH3. Osmotic water permeability at 20 degrees

C averaged 9.4 +/- 0.8 x 10(-4) cm/s for **apical** and 11.9 +/- 0.5 x 10(-4) cm/s for basolateral membranes. NH3 permeabilities at 20 degrees C averaged 0.0023 +/- 0.00035 and 0.0035 +/- 0.00080 cm/s for **apical** and basolateral membranes, respectively. These values are consistent with those obtained in isolated perfused tubules and can account for known aspects of MTAL function in vivo. Because the **apical** and basolateral membrane unit permeabilities are similar, the ability of the **apical** membrane to function as the site of barrier function arises from its very small surface area when compared with the highly redundant basolateral membrane.

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L5 34 FOCUS L4 1-
L6 34 SORT L5 PY
L7 99 S L2 AND (APICAL OR BASOLATERAL OR GPI OR PIPLC)
L8 35 DUP REM L7 (64 DUPLICATES REMOVED)
L9 34 S L6 AND L8
L10 4 S L9 AND BASOLATERAL
E SUN T?/AU
E SUN TUNG?/AU
L11 191 S E2
L12 29 S L11 AND L7
L13 16 DUP REM L12 (13 DUPLICATES REMOVED)
L14 16 SORT L13 PY

=> d an ti so au ab pi l14 11 8 5

L14 ANSWER 11 OF 16 CAPLUS COPYRIGHT 2002 ACS
AN 1998:34927 CAPLUS
DN 128:149755
TI The bladder as a bioreactor: urothelium production and secretion of growth hormone into urine
SO Nat. Biotechnol. (1998), 16(1), 75-79
CODEN: NABIF9; ISSN: 1087-0156
AU Kerr, David E.; Liang, Fengxia; Bondioli, Kenneth R.; Zhao, Haiping; Kreibich, Gert; Wall, Robert J.; **Sun, Tung-Tien**
AB **Uroplakin** genes are expressed in a bladder-specific and differentiation-dependent fashion. Using a 3.6-kb promoter of mouse **uroplakin** II gene, we have generated transgenic mice that express human growth hormone (hGH) in their bladder epithelium, resulting in its secretion into the urine at 100-500 ng/mL. The levels of urine hGH concn. remain const. for longer than 8 mo. The hGH is present as aggregates mostly in the **uroplakin**-delivering cytoplasmic vesicles that are targeted to fuse with the **apical** surface. Using the bladder as a bioreactor offers unique advantages, including the utility of all animals throughout their lives. Using urine, which contains little protein and lipid, as a starting material facilitates recombinant protein purifn.

L14 ANSWER 8 OF 16 CAPLUS COPYRIGHT 2002 ACS
AN 1995:587949 CAPLUS
DN 123:28204
TI Towards the molecular architecture of the asymmetric unit membrane of the mammalian urinary bladder epithelium: a closed "twisted ribbon" structure
SO J. Mol. Biol. (1995), 248(5), 887-900
CODEN: JMOBAK; ISSN: 0022-2836
AU Walz, Thomas; Haner, Markus; Wu, Xue-Ru; Henn, Christian; Engel, Andreas; **Sun, Tung-Tien**; Aebi, Ueli
AB The asym. unit membrane (AUM) forms numerous plaques covering the **apical** surface of mammalian urinary bladder epithelium. These plaques contain 4 major integral membrane proteins called proplakins 1a, 1b, II, and III, which form particles arranged in a well-ordered hexagonal lattice with p6 symmetry and a lattice const. of 16.5 nm. Bovine AUM plaques neg. stained with anionic Na silicotungstate revealed structural detail to 3.1 nm resoln. Correlation averaging resolved each particle into 12 stain-excluding domains arranged in 2 concentric rings (inner ring radius (rin) = 3.7 nm; outer ring radius (rout) = 6.6 nm), each with 6 domains which were rotated by roughly 30.degree. relative to each other. Neg. staining with cationic uranyl formate increased the resoln. to 2.2 nm and unveiled distinct connections between adjacent AUM particles. These connections may provide a mol. basis for the obsd. insoly. of the plaques in many detergents. Examn. of the luminal face of freeze-dried/unidirectionally metal-shadowed AUM plaques established a left-handed vorticity of the 16-nm protein particles, whereas the .

cytoplasmic face exhibited no significant surface corrugations. Three-dimensional reconstruction from Na silicotungstate-stained specimens revealed the AUM particles to be built of 6 V-shaped subunits anchored upright in the membrane. The mass d. distribution within uranyl formate-stained AUM particles was similar except that the inner tip of each V was bridged to the outer tip of an adjacent V, so that the 16-nm AUM particles appeared as a continuous, twisted ribbon embracing a central cavity. Finally, mass measurements of unstained/freeze-dried plaques by scanning transmission electron microscopy yielded a total mass of 1.120 kDa per membrane-bound AUM particle. By imposing constraints on the possible **uroplakin** stoichiometries within AUM plaques, these data provide a 1st glimpse of the mol. architecture of the 16-nm particles constituting the plaques.

L14 ANSWER 5 OF 16 CAPLUS COPYRIGHT 2002 ACS
AN 1994:429502 CAPLUS
DN 121:29502
TI Mammalian **uroplakins**. A group of highly conserved urothelial differentiation-related membrane proteins
SO J. Biol. Chem. (1994), 269(18), 13716-24
CODEN: JBCHA3; ISSN: 0021-9258
AU Wu, Xue Ru; Lin, Jun Hsiang; Walz, Thomas; Haner, Markus; Yu, Jun; Aebi, Ueli; **Sun, Tung Tien**
AB The asym. unit membrane (AUM) forms the **apical** plaques of mammalian urothelium and is believed to play a role in strengthening the urothelial **apical** surface thus preventing the cells from rupturing during bladder distention. The authors have shown previously that purified bovine AUMs contain four major integral membrane proteins: the **uroplakins** Ia (27 kDa), Ib (28 kDa), II (15 kDa), and III (47 kDa). This contradicts some previous reports indicating that some of these proteins are absent in AUMs of several species. Using an improved procedure, the authors isolated AUMs from, in addn. to cattle, eight mammalian species (human, monkey, sheep, pig, dog, rabbit, rat, and mouse). The AUMs of these species appear morphol. similar bearing cryst. patches of 12-nm protein particles with a center-to-center spacing of 16.5 nm. Using antibodies raised against synthetic oligopeptides or individual bovine **uroplakins**, the authors established by immunoblotting that the four **uroplakins** are present in AUMs of all these species. The DNA-deduced amino acid sequences of bovine and mouse **uroplakin** II revealed 83% identity. These results indicate that **uroplakins** Ia, Ib, II, and III are the major protein components of probably all mammalian urothelial plaques, and that the sequence and three-dimensional structure of **uroplakin** mols. are highly conserved during mammalian evolution.

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L22 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2002 ACS
AN 1991:140297 CAPLUS
DN 114:140297
TI Cellular receptor for urokinase plasminogen activator. Carboxyl-terminal processing and membrane anchoring by glycosyl-**phosphatidylinositol**
SO J. Biol. Chem. (1991), 266(3), 1926-33
CODEN: JBCHA3; ISSN: 0021-9258
AU Ploug, Michael; Roenne, Ebbe; Behrendt, Niels; Jensen, Arne L.; Blasi, Francesco; Danoe, Keld
AB The cellular receptor for human urokinase-type plasminogen activator (u-PAR) is shown by several independent criteria to be a true member of a family of integral membrane proteins, anchored to the plasma membrane exclusively by a **C-terminal glycosylphosphatidylinositol** moiety. Amino acid anal. of u-PAR after micropurifn. by affinity chromatog. and N-[2-hydroxy-1,1-bis(hydroxymethyl)ethyl]glycine-SDS-PAGE revealed the presence of 2-3 mol of ethanolamine/mol protein. Membrane-bound u-PAR is efficiently released from the surface of human U937 cells by trace amts. of purified bacterial **phosphatidylinositol**-specific phospholipase C. This sol. form of u-PAR retains the binding specificity toward both u-PA and its N-terminal fragment holding the receptor-binding domain. Treatment of purified u-PAR with **phosphatidylinositol**-specific phospholipase C or mild alkali completely alters the hydrophobic properties of the receptor as judged by temp.-induced detergent-phase sepn. and charge-shift electrophoresis. Biosynthetic labeling of u-PAR was obtained with [3H]ethanolamine and myo-[3H]inositol. Finally, comparison of amino acid compns. derived from cDNA sequence and amino acid anal. shows that a polypeptide of medium hydrophobicity is excised from the C-terminus of the nascent u-PAR. A similar proteolytic processing has been reported for other proteins that are linked to the plasma membrane by a glycosyl-**phosphatidylinositol** membrane anchor.

L22 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2002 ACS
AN 1999:798262 CAPLUS
DN 132:120337
TI Glycosylation and proteolytic processing of 70 kDa C-terminal recombinant polypeptides of Plasmodium falciparum merozoite surface protein 1 expressed in mammalian cells
SO Glycobiology (1999), 9(12), 1347-1356
CODEN: GLYCE3; ISSN: 0959-6658
AU Yang, Shutong; Nikodem, David; Davidson, Eugene A.; Gowda, D. Channe
AB The cDNAs that encode the 70 kDa C-terminal portion of Plasmodium falciparum merozoite surface protein 1 (MSP-1), with or without an N-terminal signal peptide sequence and **C-terminal glycosylphosphatidylinositol** (GPI) signal sequence of MSP-1, were expressed in mammalian cell lines via recombinant vaccinia virus. The polypeptides were studied with respect to the nature of glycosylation, localization, and proteolytic processing. The polypeptides derived from the cDNAs that contained the N-terminal signal peptide were modified with N-linked high mannose type structures and low levels of O-linked oligosaccharides, whereas the polypeptides from the cDNAs that lacked the signal peptide were not glycosylated. The GPI anchor moiety is either absent or present at a very low level in the polypeptide expressed from the cDNA that contained both the signal peptide and GPI signal sequences. Together, these data establish that whereas the signal peptide of MSP-1 is functional, the GPI anchor signal is either nonfunctional or poorly functional in mammalian cells. The polypeptides expressed from the cDNAs that contained the signal peptide were proteolytically cleaved at their C-termini, whereas the polypeptides expressed from the cDNAs that lacked the signal peptide were uncleaved. While the polypeptide expressed from the cDNA contg. both the signal peptide and GPI anchor signal was truncated by .apprx.14 kDa at the C-terminus, the polypeptide derived from the cDNA with only the signal peptide was processed to remove .apprx.6 kDa, also from the C-terminus. Furthermore, the polypeptides derived from cDNAs that lacked the signal peptide were exclusively localized intracellularly, the polypeptides from cDNAs that contained the signal peptide were predominantly intracellular, with low levels on the cell surface; none of the polypeptides was secreted into the culture medium to

a detectable level. These results suggest that N-glycosylation alone is not sufficient for the efficient extracellular transport of the recombinant MSP-1 polypeptides through the secretory pathway in mammalian cells.